

WASTE SECTOR: LANDFILL GAS FOR ENERGY

◆ MISSOURI

Using Landfill Gas in Boilers

Since January of 1997, Pattonville High School in St. Louis County, Missouri has been using landfill gas (LFG) from the neighboring Fred Weber, Inc. Landfill to fire its hot water boilers. The Weber landfill, one of the largest in Missouri, collects LFG (which is a natural product of the decomposition of refuse) to comply with the 1996 Emissions Guidelines for Landfills. The Weber company developed a gas collection system to recover LFG and utilize it as a substitute for natural gas in their own asphalt plant operations. The landfill's production of gas exceeds the company's demand, however, and excess gas was being flared.



The partnership between Pattonville High School and the Weber landfill was initiated after students involved in the school's ecology club suggested that the school board pursue the use of LFG in school boilers. Fred Weber, Inc. offered to provide excess LFG to the school at no cost. The school board investigated the feasibility of the project and determined that the future cost savings and other benefits outweighed the initial capital cost of replacing existing gas burners, regulators, and lines.

Results:

For over two years now, the boilers at Pattonville High School have been fired by LFG from the Weber landfill. The school district paid \$182,000 in initial construction costs and experiences approximately \$36,500 in annual savings on their heating bill. Fred Weber, Inc. invested \$220,000 to build its half of the pipeline for gas donation to the school, and will be able to reduce flaring as a result of redirecting LFG to the high school boilers. In 1998, 15.5 million cubic feet of LFG was supplied to Pattonville High School. By using this gas for energy recovery, the school was able to avoid burning a corresponding quantity of natural gas; and therefore, CO₂ emissions of 230 MTCE were avoided.

Cost Benefits	Greenhouse Gas Reductions
\$36,500/yr (school heating savings)	230 MTCE*/yr of CO ₂ (1998)

Also, as a result of the project, annual cost savings enable the school to spend additional money on classroom services and supplies, rather than on heating bills.

Principal Actors:

The landfill gas to heat energy project is a joint venture between Pattonville High School and Fred Weber Inc. Landfill. Fred Weber Inc. paid for part of the construction costs incurred while building pipelines to connect landfill gas collection to the school boilers and also donated the gas. The school district was responsible for part of the construction costs and received a \$150,000 loan from the Missouri Department of Natural Resources at 2% interest as well as a \$25,000 grant from the St. Louis County Solid Waste Commission.

Additional Information:

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This case study is based on information provided by Orville Travis, Missouri Department of Natural Resources.

* Original data have been converted from million cubic feet per year of landfill gas to Metric Tons of Carbon Equivalent (MTCE) of CO₂.